Product Specifications

L3 46-Port 100/1000BASE-X SFP + 2-Port Gigabit TP/SFP + 4-Port 10G SFP+ Managed Switch

GS-6320-46S2C4XR

Version 1.0

Change History:

Revision:	Date:	Author:	Change List
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Author:	Marc Liao	Editor:	Marc Liao
Reviewed By:		Approved By:	Kent Kang

1. PRODUCT DESCRIPTION

10Gbps Fiber and Multiple Dual Speed Fiber Ports Deliver High-speed Networking

PLANET GS-6320-46S2C4XR Layer 3 Managed Switch features 48 100/1000Mbps SFP ports, 2 shared RJ45 copper ports, 4 10G SFP+ ports and **Layer 3 IP routing** in a 19-inch metal housing that provides high-density performance. With **10Gbps uplink** and **176Gbps switching fabric**, the GS-6320-46S2C4XR greatly simplifies the tasks of handling extremely large amounts of data in a secure topology linking to backbone or high capacity servers for ISP and enterprise VoIP, video streaming, and multicast applications.

Layer 3 Dynamic Routing Support

The GS-6320-46S2C4XR enables the administrator to conveniently boost network efficiency by configuring Layer 3 IPv4/IPv6 VLAN static routing manually, and the **OSPFv2** (Open Shortest Path First) settings automatically. The OSPF is an interior dynamic routing protocol for autonomous system based on link state. The protocol creates a database for link state by exchanging link states among Layer 3 switches, and then uses the Shortest Path First algorithm to generate a route table based on that database.

Network with Cybersecurity Helps Minimize Security Risks

The GS-6320-46S2C4XR comes with enhanced cybersecurity to fend off cyberthreats and cyberattacks. It supports SSHv2, TLS and SSL protocols to provide strong protection against advanced threats. Served as a key point to transmit data to customer's critical equipment in a business network, the cybersecurity feature of the GS-6320-46S2C4XR protects the switch management and enhances the security of the mission-critical network without any extra deployment cost and effort.

Redundant Ring, Fast Recovery for Critical Network Applications

The GS-6320-46S2C4XR supports redundant ring technology and features strong, rapid self-recovery capability to prevent interruptions and external intrusions. It incorporates advanced **ITU-T G.8032 ERPS (Ethernet Ring Protection Switching)** technology, Spanning Tree Protocol (802.1s MSTP), and **redundant power** input system into customer's automation network to enhance system reliability and uptime in harsh factory environments. In a certain simple Ring network, the recovery time could be **less than 10ms** to quickly bring the network back to normal operation.

AC and DC Redundant Power to Ensure Continuous Operation

The GS-6320-46S2C4XR is equipped with one 100~240V AC power supply unit and one additional **36-60V DC** power supply unit for redundant power supply. A redundant power system is also provided to enhance the reliability with either AC or DC power supply unit. The redundant power system is specifically designed to handle the demands of high-tech facilities requiring the highest power integrity.

Solution for IPv6 Networking

With the support for IPv6/IPv4 protocol, and easy and user-friendly management interfaces, the GS-6320-46S2C4XR is the best choice for IP surveillance, VoIP and wireless service providers to connect with the IPv6 network. It also helps SMBs to step in the IPv6 era with the lowest investment and without having to replace the network facilities even though ISPs establish the IPv6 FTTx edge network.

User-friendly Secure Management

For efficient management, the GS-6320-46S2C4XR is equipped with console, web and SNMP management interfaces.

■   With the built-in **web-based** management interface, the GS-6320-46S2C4XR offers an easy-to-use, platform-independent management and configuration facility.

■   The GS-6320-46S2C4XR supports SNMP and it can be managed via any management software based on the standard SNMP v1 and v2 protocols.

■   For **text-based** management, it can be accessed via Telnet and the console port. For reducing product learning time, the GS-6320-46S2C4XR offers Cisco-like command and customer doesn't need to learn new command from these switches.

Moreover, the GS-6320-46S2C4XR offers remote secure management by supporting **SSH**, **TLS** and **SNMPv3** connection which can encrypt the packet content at each session.

SMTP/SNMP Trap Event Alert

The GS-6320-46S2C4XR provides event alert function to help to diagnose the abnormal device owing to whether or not there is a break of the network connection, or the rebooting response.

Robust Layer 2 Features

The GS-6320-46S2C4XR can be programmed for advanced switch management function, such as dynamic port link aggregation, **Q-in-Q VLAN**, **Multiple Spanning Tree Protocol (MSTP)**, Layer 2 to Layer 4 QoS, bandwidth control and **IGMP/MLD snooping**. The GS-6320-46S2C4XR allows the operation of a high-speed trunk combining multiple ports. Supporting 26 trunk groups, it enables a maximum of up to 16 ports per trunk and supports connection fail-over as well.

Powerful Security

The GS-6320-46S2C4XR offers comprehensive **Layer 2 to Layer 4 Access Control List (ACL)** for enforcing security to the edge. It can be used to restrict network access by denying packets based on source and destination IP address, TCP/UDP port number or defined typical network applications. Its protection mechanism also comprises **802.1x Port-based** and **MAC-based** user and device authentication. With the **private VLAN** function, communication between edge ports can be prevented to ensure user privacy.

Enhanced Security and Traffic Control

The GS-6320-46S2C4XR also provides **DHCP Snooping**, **IP Source Guard** and **Dynamic ARP Inspection** functions to prevent IP snooping from attack and discard ARP packets with invalid MAC address. The network administrator can now build highly-secure corporate networks with considerably less time and effort than before.

Flexible and Extendable 10Gb Ethernet Solution

10G Ethernet is a big leap in the evolution of Ethernet. Each of the 10G SFP+ slots in the GS-6320-46S2C4XR supports **dual speed** and **10GBASE-SR/LR or 1000BASE-SX/LX**. With its 4-port, 10G Ethernet link capability and additional 4-port 1G Ethernet link capability, the administrator now can flexibly choose the suitable SFP/SFP+ transceiver according to the transmission distance or the transmission speed required to extend the network efficiently. The GS-6320-46S2C4XR provides broad bandwidth and powerful processing capacity.

Intelligent SFP Diagnosis Mechanism

The GS-6320-46S2C4XR supports **SFP-DDM (Digital Diagnostic Monitor)** function that greatly helps network administrator to easily monitor real-time parameters of the SFP transceivers, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.

2. PRODUCT FEATURES

▶ **Physical Port**

- 48 100/1000BASE-X mini-GBIC/SFP slots

- Two 10/100/1000BASE-T RJ45 copper ports, shared with Port-1 to Port-2

- 4 10GBASE-SR/LR SFP+ slots, compatible with 1000BASE-SX/LX/BX SFP

- RS-232 RJ45 console interface for switch basic management and setup

▶ **Layer 3 IP Routing Features**

- IP dynamic routing protocol supports OSPFv2

- Routing interface provides per VLAN routing mode

- Supports maximum 128 static routes and route summarization

- Supports hardware-based wire-speed VLAN routing

▶ **Layer 2 Features**

- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x pause frame flow control (full-duplex)
- High performance of Store-and-Forward architecture and runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Storm Control support
  - Broadcast/Multicast/Unknown unicast
- Supports **VLAN**
  - IEEE 802.1Q tagged VLAN
  - Up to 255 VLANs groups, out of 4095 VLAN IDs
  - Supports provider bridging (VLAN Q-in-Q, IEEE 802.1ad)
  - Private VLAN Edge (PVE)
  - Port Isolation
  - MAC-based VLAN
  - IP Subnet-based VLAN
  - Protocol-based VLAN
  - VLAN Translation
  - Voice VLAN
  - GVRP (GARP VLAN Registration Protocol)
- Supports Spanning Tree Protocol
  - STP, IEEE 802.1D Spanning Tree Protocol
  - RSTP, IEEE 802.1w Rapid Spanning Tree Protocol
  - MSTP, IEEE 802.1s Multiple Spanning Tree Protocol, spanning tree by VLAN
  - BPDU Guard
- Supports **Link Aggregation**
  - 802.3ad Link Aggregation Control Protocol (LACP)
  - Cisco ether-channel (static trunk)
  - Maximum 26 trunk groups, up to 16 ports per trunk group
- Provides port mirror (many-to-1)
- Port mirroring to monitor the incoming or outgoing traffic on a particular port
- Loop protection to avoid broadcast loops
- Compatible with Cisco uni-directional link detection(UDLD) that monitors a link between two switches and blocks the ports on both ends of the link if the link fails at any point between the two devices
- Supports G.8032 ERPS (Ethernet Ring Protection Switching)

▶ **Quality of Service**

- ■ Ingress Shaper and Egress Rate Limit per port bandwidth control
- ■ 8 priority queues on all switch ports
- ■ Traffic classification
    - IEEE 802.1p CoS
    - TOS/DSCP/IP Precedence of IPv4/IPv6 packets
    - IP TCP/UDP port number
    - Typical network application
- ■ Strict priority and Weighted Round Robin (WRR) CoS policies
- ■ Supports QoS and In/Out bandwidth control on each port
- ■ Traffic policies on the switch port
- ■ DSCP remarking

▶ **Multicast**

- ■ Supports IPv4 IGMP Snooping v1, v2 and v3
- ■ Supports IPv6 MLD Snooping v1 and v2
- ■ Querier mode support
- ■ IPv4 IGMP Snooping port filtering
- ■ IPv6 MLD Snooping port filtering
- ■ Multicast VLAN Registration (MVR) support

▶ **Security**

- ■ Authentication
    - IEEE 802.1x port-based/MAC-based network access authentication
    - IEEE 802.1x authentication with guest VLAN
    - Built-in RADIUS client to cooperate with the RADIUS servers
    - RADIUS/TACACS+ users access authentication
    - Guest VLAN assigns clients to a restricted VLAN with limited services
- ■ Access Control List
    - IP-based Access Control List (ACL)
    - MAC-based Access Control List
- ■ Source MAC/IP address binding
- ■ DHCP Snooping to filter un-trusted DHCP messages
- ■ Dynamic ARP Inspection discards ARP packets with invalid MAC address to IP address binding
- ■ IP Source Guard prevents IP spoofing attacks
- ■ IP address access management to prevent unauthorized intruder

▶ **Management**

- ■ IPv4 and IPv6 dual stack management
- ■ Switch Management Interfaces
    - Web switch management
    - Console/Telnet Command Line Interface
    - SNMP v1 and v2c switch management
    - SSHv2, TLSv1.2 and SNMP v3 secure access
- ■ SNMP Management

- Four RMON groups (history, statistics, alarms, and events)
- SNMP trap for interface Link Up and Link Down notification

■ **IPv6** IP Address/NTP/DNS management

■ BOOTP and DHCP for IP address assignment

■ System Maintenance

- Firmware upload/download via HTTP
- Reset button for system reboot or reset to factory default
- Dual Images

■ RJ45 type RS232 console interface for switch basic management and setup

■ DHCP Relay

■ DHCP Option82

■ DHCP Server

■ User Privilege levels control

■ NTP (Network Time Protocol)

■ UPnP

■ Link Layer Discovery Protocol (LLDP) and LLDP-MED

■ IEEE 802.3ah OAM

■ Network Diagnostic

- SFP-DDM (Digital Diagnostic Monitor)
- ICMPv6/ICMPv4 Remote Ping
- Cable Diagnostic technology provides the mechanism to detect and report potential cabling issues

■ SMTP/Syslog remote alarm

■ System Log

■ PLANET NMS System and Smart Discovery Utility for deployment manage

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3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

Switch ASIC:	Microsemi VSC7449	x 1
CPU	MIPS 500MHz (integrated with VSC7449)	x 1
Giga PHY:	Microsemi VSC8504XKS-01	x 6
Flash:	64M bytes	x 1
SD RAM:	512M bytes	x 1
Open Frame Power Supply:	UMEC Switching Power Supply Output: 12V/150W	x 1

3.2 FUNCTION SPECIFICATIONS

Product	GS-6320-46S2C4XR
Hardware Specifications	
100/1000X SFP/mini-GBIC Slots	48
10/100/1000T Copper Ports	2
10GBASE-LR/SR SFP+ Slots	4, compatible with 1000BASE-SX/LX/BX SFP
Console	1 x RJ45 serial port (115200 , 8, N, 1)
Reset Button	< 5 sec: System reboot >= 10 sec: Factory default
Smart Fan	2
Power Requirements	AC: 100~240V, 50/60Hz DC: 36V-60V, 2A max. Redundant power designed
Power Consumption **(Full Loading)**	AC 110V: 72 watts/245BTU (max.) DC 60V: 69 watts/235BTU (max.)
ESD Protection	6KV DC
Dimensions (W x D x H)	440 x 200 x 40 mm, 1U height
Weight	3.4kg
SDRAM	512Mbytes
Flash Memory	64Mbytes

LED	**System:**
	   Fan2 Alert (Red), Fan1 Alert (Red), DC (Green), AC (Green)
	   Ring (Green), R.O. (Green), SYS (Green)
	10/100/1000BASE-T RJ45 Interfaces (Port 1 to Port 2):
	   1000Mbps LNK/ACT (Green)
	   10/100Mbps LNK/ACT (Orange)
	100/1G Mbps SFP Interfaces (Port 1 to Port 48):
	   1000 LNK/ACT (Green)
	   100 LNK/ACT (Orange)
	1G/10G BASE-X Interfaces (Port 49 to Port 52):

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	10G LNK/ACT (Green) 1000Mbps LNK/ACT (Green)
Switch Performance	
Switch Fabric	176Gbps/non-blocking
Throughput	130Mpps@ 64Bytes packet
Switch Architecture	Store-and-Forward
Address Table	16K entries, automatic source address learning and aging
Shared Data Buffer	32Mbits
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex
Jumbo Frame	10KB
Layer 2 Functions	
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow Control disable/enable
Port Status	Display each port's speed duplex mode, link status, flow control status, auto negotiation status, trunk status
Port Mirroring	TX/RX/Both Many-to-1 monitor
VLAN	802.1Q tagged VLAN, up to 255 VLAN groups Q-in-Q tunneling Private VLAN Edge (PVE) Port Isolation MAC-based VLAN IP Subnet-based VLAN Protocol-based VLAN VLAN Translation Voice VLAN MVR (Multicast VLAN Registration) GVRP Up to 255 VLAN groups, out of 4095 VLAN IDs
Link Aggregation	IEEE 802.3ad LACP/Static Trunk Supports 26 trunk groups with 16 ports per trunk

QoS	Traffic classification based, strict priority and WRR
	8-level priority for switching
	  - Port number
	  - 802.1p priority
	  - 802.1Q VLAN tag
	  - DSCP/TOS field in IP packet

IGMP Snooping	IPv4 IGMP (v1/v2/v3) snooping IPv4 IGMP querier mode support Supports 255 IGMP groups
MLD Snooping	IPv6 MLD (v1/v2) snooping, IPv6 MLD querier mode support Supports 255 MLD groups

Access Control List	IP-based ACL/MAC-based ACL
	ACL based on:
	   - MAC Address
	   - IP Address
	   - Ethertype
	   - Protocol Type
	   - VLAN ID
	   - DSCP
	   - 802.1p Priority
	Up to 256 entries

Bandwidth Control	Per port bandwidth control Ingress: 10Kbps~13000Mbps Egress: 10Kbps~13000Mbps
Layer 3 Functions	
IP Interfaces	Max. 128 VLAN interfaces
Routing Table	Max. 128 routing entries
Routing Protocols	IPv4 OSPFv2 dynamic routing IPv4 hardware-based Layer 3 static routing IPv6 hardware-based Layer 3 static routing
Management	
Basic Management Interfaces	Console; Telnet; Web browser; SNMP v1, v2c
Secure Management Interfaces	SSHv2, TLS v1.2, SNMP v3
Management Functions	Firmware upgrade by HTTP protocol through Ethernet network Remote syslog and local system log LLDP protocol UDLD NTP UPnP
SNMP MIBs	RFC 1213 MIB-II RFC 2863 IF-MIB RFC 1493 Bridge MIB RFC 1643 Ethernet MIB RFC 2863 Interface MIB RFC 2665 Ether-Like MIB RFC 2737 Entity MIB RFC 2819 RMON MIB (Groups 1, 2, 3 and 9) RFC 2618 RADIUS Client MIB RFC 3411 SNMP-Frameworks-MIB IEEE 802.1X PAE IEEE 802.1ab LLDP MAU-MIB
Standards Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX

	IEEE 802.3z 1000BASE-SX/LX
	IEEE 802.3ab 1000BASE-T
	IEEE 802.3ae 10Gb/s Ethernet
	IEEE 802.3x flow control and back pressure
	IEEE 802.3ad port trunk with LACP
	IEEE 802.1D Spanning Tree Protocol
	IEEE 802.1w Rapid Spanning Tree Protocol
	IEEE 802.1s Multiple Spanning Tree Protocol
	IEEE 802.1p Class of Service
	IEEE 802.1Q VLAN tagging
	IEEE 802.1x Port Authentication Network Control
	IEEE 802.1ab LLDP
	IEEE 802.3ah OAM
	RFC 768 UDP
	RFC 791 IP
	RFC 792 ICMP
	RFC 2068 HTTP
	RFC 1112 IGMP v1
	RFC 2236 IGMP v2
	RFC 3376 IGMP v3
	RFC 2710 MLD v1
	RFC 3810 MLD v2
	RFC 2328 OSPF v2
	ITU-T G.8032 ERPS Ring
Environments	
Operating	Temperature: 0 ~ 50 degrees C Relative Humidity: 5 ~ 95% (non-condensing)
Storage	Temperature: -10 ~ 70 degrees C Relative Humidity: 5 ~ 95% (non-condensing)

3.3 PHYSICAL SPECIFICATIONS:

Dimensions:

440 x 200 x 40 mm (W x D x H), 1U height

Weight:

3.4kg

■ **Front Panel:**

■ **Rear Panel:**

■ **LED Definition**

■ **System/Alert**

LED	Color	Function
AC	Green	**Lights** to indicate that the Switch has AC power input.
DC	Green	**Lights** to indicate that the Switch has DC power input.
FAN 1	Red	**Lights** to indicate that FAN 1 is down.
FAN 2	Red	**Lights** to indicate that FAN 2 is down.
SYS	Green	**Lights** to indicate the system is working.
R.O.	Green	**Lights** to indicate that Switch has been enabled to Ring Owner.
Ring	Green	**Lights** to indicate that the ERPS Ring has been created successfully.

■ **10/100/1000BASE-T interfaces (Port-1 to Port-2)**

LED	Color	Function	
1000 LNK/ACT	Green	**Lights**:	To indicate that the port is operating at 1000Mbps.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.
10/100 LNK/ACT	Orange	**Lights**:	To indicate that the port is operating at 10/100Mbps.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.

■ **100/1000BASE-X Interfaces (Port-1 to Port-48)**

LED	Color	Function	
1000 LNK/ACT	Green	**Lights**:	To indicate that the port is operating at 1000Mbps.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.
100 LNK/ACT	Orange	**Lights**:	To indicate that the port is operating at 100Mbps.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.

■ **1G/10GBASE-X SFP+ Interfaces (Port-49 to Port-52)**

LED	Color	Function	
10G LNK/ACT	**Green**	**Lights**:	To indicate that the port is operating at 10Gbps.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.
1G LNK/ACT	**Green**	**Lights**:	To indicate that the port is operating at 1Gbps.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.

3.4 ENVIRONMENTAL SPECIFICATIONS

Operating:

Temperature: 0°C ~ 50 degrees C

Relative Humidity: 5% ~ 95% (non-condensing)

Storage:

Temperature: -10°C ~ 70 degrees C

Relative Humidity: 5% ~ 95% (non-condensing)

3.5 ELECTRICAL SPECIFICATIONS

Model		GS-6320-46S2C4XR
AC Power Input Voltage		100 ~ 240VAC, 50 / 60Hz, auto-sensing.
Power Consumption (System on)	110V	23.1 watts/78BTU
	220V	22.7 watts/77BTU
Power Consumption (Full Loading)	110V	72.1 watts/246BTU
	220V	69 watts/235BTU
DC Power Input Voltage		DC: 36V-60V, 2A max.
Power Consumption (System on)	DC 36V	23.4 watts/79BTU
	DC 48V	24.1 watts/82BTU
	DC 60V	24 watts/81BTU
Power Consumption (Full Loading)	DC 36V	68.4 watts/233BTU
	DC 48V	67.2 watts/229BTU
	DC 60V	69.1 watts/235BTU

3.6 TEMPERATURE DETECTION SPECIFICATIONS

Smart Fan Speed Control

PoE Chipset Temperature Value	Status
< =55 degrees C	Fan is in low speed.
>= 60 degrees C	Fan is in high speed.

3.7 REGULATORY COMPLIANCE

CE FCC Part 15 Class A, CE, LVD

3.8 RELIABILITY

MTBF > 50,000 hrs @ 25 degrees C

3.9 BASIC PACKAGING

- GS-6320-46S2C4XR Switch   x 1
- Quick Installation Guide   x 1
- RS232 to RJ45 Console Cable   x 1
- Power Cord   x 1
- SFP Dust Cap   x 52
- Rubber Feet   x 4
- Two Rack-mounting Brackets with   x 1
  Attachment Screws

3.10 PACKING INFORMATION

Box Dimensions (W x D x H)	554 x 308 x 95 mm
Gross Weight (without power supply)	TBD kg
Carton Dimensions (W x D x H)	595 x 350 x 525 mm
Total Carton Weight (without power supply)	TBD kg
Quantity	5pcs in one carton